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A NEW SPECIES OF *PHRYNOCEPHALUS*
(SAURIA: AGAMIDAE) FROM AFGHANISTAN,
WITH REMARKS ON *PHRYNOCEPHALUS*
ORNATUS BOULENGER

By

Steven C. Anderson

and

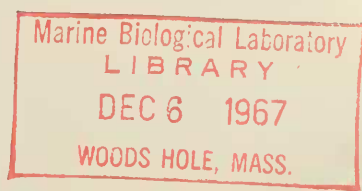
Alan E. Leviton

California Academy of Sciences, San Francisco 94118

Among the specimens of amphibians and reptiles collected by Richard J. and Erica D. Clark in Afghanistan in 1964 were a number of lizards referable to *Phrynocephalus ornatus* Boulenger. Closer examination revealed that two distinct species have been confused under this name, the type series including both forms. The excellent color figures in Boulenger's (1889) report on reptiles collected by the Afghan Delimitation Commission clearly show both species. It is necessary, therefore, to designate a lectotype for *P. ornatus* Boulenger, and to describe the previously unrecognized form as well as redescribe *P. ornatus*.

For the loan of comparative material we are indebted to the following curators and institutions: Miss Alice Grandison, British Museum (Natural History), BM; Mr. Hymen Marx, Field Museum of Natural History, Chicago, FMNH; Dr. Richard G. Zweifel, American Museum of Natural History, New York, AMNH; Dr. Philip Smith, Illinois Natural History Survey, INHS; Dr. James A. Peters, United States National Museum, Washington, D.C., USNM; and Dr. Ernest E. Williams, Museum of Comparative Zoology, Harvard University, MCZ. Miss Grandison was especially courteous in allowing us to examine part of the syntypic series of *P. ornatus*.

Boulenger, in 1887, described the nominal species based on 14 specimens of which we have seen nine. The specimens may be divided into two series, one



being characterized by the presence of a distinct set of dorsolateral and lateral stripes and a single elongate suborbital scale, the other by the absence of a distinct set of dorsolateral and lateral stripes and by the presence of two or three small suborbital scales. Examination of material in addition to the specimens from the syntypic series of *P. ornatus* confirms our view that two species have been confused under that name. To clarify the matter we hereby designate British Museum specimen number 1946.8.28.20 (δ) lectotype of *P. ornatus*, and assign to that nominal species, as paralectotypes, the following specimens of the original syntypic series we have seen: BM 1946.8.28.18 (\varnothing), 1946.8.28.24 (\varnothing), 1946.8.28.23 (δ), 1946.8.28.21 (δ), 1946.8.28.26 (juvenile), 1946.8.28.19 (\varnothing).¹

The syntypes referred above to *P. ornatus* are those lacking distinct dorsolateral and lateral stripes and possessing two or three small suborbital scales. Boulenger's (1889) illustrations (pl. 8, figs. 3, 3a and 3b [*not* 3c]) clearly show this form and represent the colors of fresh specimens. On the other hand Boulenger's illustration figure 3c, on plate 8, represents a typical specimen of the new form for which we provide the following name.

***Phrynocephalus clarkorum* Anderson and Leviton, new species.²**

Phrynocephalus ornatus BOULENGER, 1887, Cat. Lizards British Mus., vol. 3, p. 496 (part).

HOLOTYPE. CAS 97989, female, collected 20 miles southeast of Kandahar, Afghanistan, 31° 20' N., 65° 50' E., on 25 August 1964 by Richard J. and Erica D. Clark.

PARATYPES (12). AMNH 88552–88553, 9–19 miles northwest of Nushki, Chagai District, West Pakistan, 15 May 1962; AMNH 88567–88568, 2 miles northwest of Ahmad Wal, Chagai District, West Pakistan, 15 May 1962; AMNH 96153, 96155, 1.5 miles north of Ahmad Wal, Chagai District, West Pakistan, 29–30 August 1965; BM 1946.8.28.22, 1946.8.28.25, between Nushki and Helmand, Baluchistan, October 1884 [formerly included in the syntypic series of *P. ornatus* Boulenger, *sensu lato*]; BM 1964.281, Nushki, West Pakistan. CAS 103787, 20 miles southeast of Kandahar, 31° 23' N., 65° 53' E., Afghanistan, 25 August 1964. INHS 9767–9768, 8 miles northwest of Nushki, Chagai District, West Pakistan, 24 August 1965.

DIAGNOSIS. Dorsal scales subequal or increasing in size slightly from dorsolateral to middorsal line, homogeneous, keeled; nasal shields in contact; no spinose scales on neck or back of head; both sides of fourth toe and lateral aspect of third toe strongly fringed; suborbital scales elongate, two to three times as

¹ Two specimens, BM 1946.8.28.25 (\varnothing) and 1946.8.28.22 (\varnothing) are paratypes of our new nominal species, *P. clarkorum*. The remaining five specimens of the original series, which we have not seen, are for the moment of uncertain disposition.

² We take pleasure in naming this new form for Mr. and Mrs. Richard J. Clark, Field Associates of the California Academy of Sciences and avid students of the herpetofauna of southwest Asia.

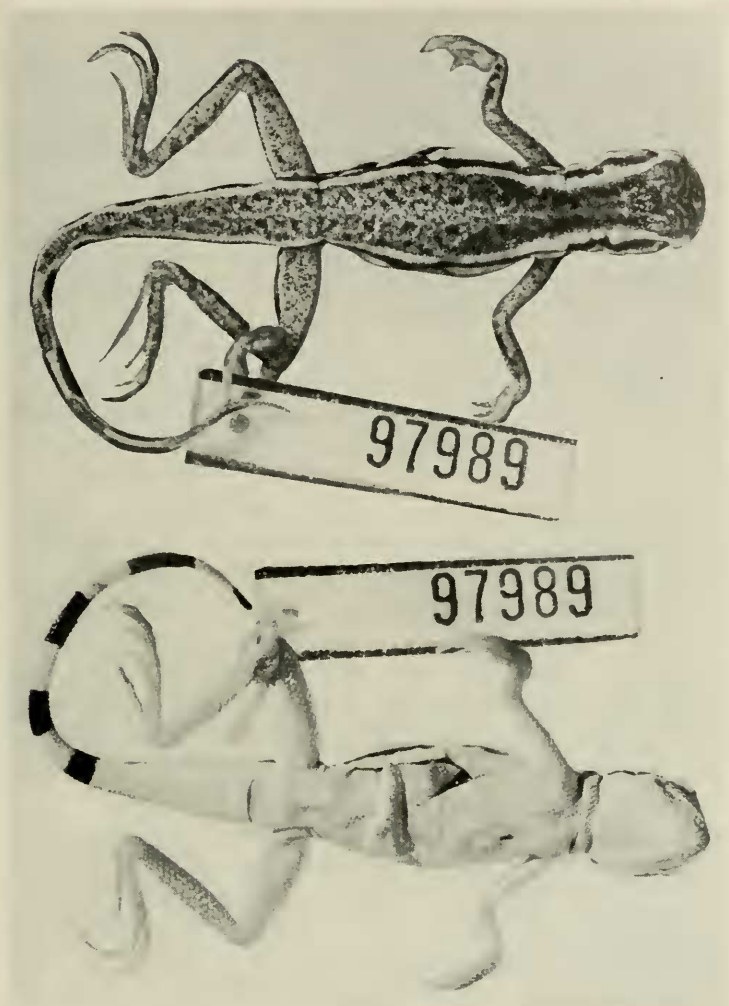


FIGURE 1. Dorsal (above) and ventral (below) view of holotype of *Phrynocephalus clarkorum* Anderson and Leviton.

long as adjacent scales; lateral scales within broad dark lateral stripe smaller than adjacent scales; a distinct, dark-margined light dorsolateral stripe from posterior angle of eye along body onto tail.

DESCRIPTION. CAS 97989. Head about 1.1 times as long as broad, almost twice as long as high, forehead convex and slightly sloping in profile; length of head (from angle of jaw) goes 3.9 times into snout-vent length; tail nearly $1\frac{1}{2}$ times length of head and body; hind limb reaches well beyond tip of snout, tibia

1½ times length of head; forelimb reaches well beyond tip of snout. Nostrils directed upward, nasals in contact, the lower portions separated by one scale; nasals separated from supralabials by four scales; most scales of head keeled; nine scales between nasals and scale bearing prominent pineal eye; 29 scales across hood, between eyes; 13 supralabials; 10/11 infralabials; two rows of scales separate orbit from supralabials; an elongate, strongly ridged plate below orbit, equal in length to four supralabials; two greatly enlarged, strongly keeled elongate scales in the temporal region, the anterior larger than the posterior, and both ringed by slightly enlarged temporal scales; 33 scales between mental and gular fold. Dorsal scales feebly keeled, imbricate, increasing slightly toward midline, homogeneous; scales within dark lateral stripe smaller than scales on either side of dark stripe; ventrals smooth; scales of dorsal surfaces of limbs and tail strongly keeled, imbricate, subequal; 88 scales round middle of body. Both sides of fourth toe and outer aspect of third toe strongly fringed; fringes on inner side of third toe point downward; 33 lamellae beneath fourth toe. Color (in alcohol) light sandy gray above, with two rows of dark spots down back; a dorsolateral, straight-edged, black-margined white stripe from behind eye, down body onto tail; a straight-edged black stripe of about equal width below this; another white stripe below that, followed by a thin black stripe; a dark streak on the lower temporal region, and a dark streak on hinder aspect of thigh; tail with a series of elongate oval brown spots down vertebral line, linked by a light chain; venter white, no dark markings on chin or throat except for some black mottling below angle of jaw; tail below with five dark bars, tip of tail white; light areas on underside of tail yellow-green in life (Clark, personal communication).

Measurements (in millimeters): Total length 79; tail length 47; head

TABLE 1. *Measurements of material examined of Phrynocephalus clarkorum Anderson and Leviton, new species.*

	Sex	Snout-vent length	Tail length
AMNH 88552	♀	37	50
88553	♂	38	53
88567	♂	40	50
88568	♂	36	48
96153	♀	27	43
96155	♀	30	43
BM 1946.8.28.22	♀	29	42
1946.8.28.25	♀	31	48
1964.281	♂	40	58
CAS 97989	♀	34	47
103787	juv.	26	36
INHS 9767	♀	32	44
9768	♀	34	47

length 9; length of forelimb 19; length of hind limb (including foot) 35; length of foot 15.

REMARKS. Boulenger's (1889) illustration (pl. 8, fig. 3c) shows the colors of a fresh specimen of this new form. While the new species appears to be closely related to *P. ornatus*, it is distinguished by its somewhat more slender habitus, distinctive color pattern, small lateral scales, enlarged suborbital plate, and four (rather than two or three) scales between upper labials and nasals.

Whether or not these two similar forms inhabit the same habitats, and to what extent their distributions overlap, are questions necessitating further investigation.

Examination of ovaries and oviducts in all adult females reveals the presence of ovarian eggs in animals collected during the months of August and October; oviducal eggs were found in a single female collected during the month of May. In a like manner, ovarian eggs were noted in females of *P. ornatus* collected during July, August, September, and October, the ovarian eggs of the July specimens being least developed. Oviducal eggs were found in the two May females in our series. It seems reasonable to assume that the oögenesis cycle is initiated in early summer of one year and is completed by the spring of the following year, in time for spring breeding.

***Phrynocephalus ornatus* Boulenger.**

Phrynocephalus ornatus BOULENGER, 1887, Cat. Lizards British Mus., vol. 3, p. 496 (part; type locality: between Nushki and Helmand, Afghanistan; lectotype [see below] in British Museum, London).

MATERIAL EXAMINED (34). BM 1946.8.28.20, between Nushki and Helmand, Baluchistan, lectotype; BM 1946.8.28.21, 1946.8.28.23–1946.8.28.24, 1946.8.28.26, same data as lectotype, paralectotypes; BM 1946.8.28.18–1946.8.28.19, Helmand, Afghanistan, paralectotypes; BM 1912.3.26.17, Kharan, Baluchistan; BM 1964.1137–1964.1143, Kandahar, Afghanistan. AMNH 88479, near Kharan, West Pakistan; AMNH 88550–88551, 9–10 miles northwest of Nushki, Chagai District, West Pakistan; AMNH 88569, 2 miles northwest of Ahmad Wal, Chagai District, West Pakistan; AMNH 96154, 1.5 miles north of Ahmad Wal, Chagai District, West Pakistan. CAS 84650–84653, Chah-i-Angir, Afghanistan; CAS 96272–96273, region east of Ghirishk, 32° 00' N., 64° 10' E., Afghanistan; CAS 97974, 103788–103790, region east of Ghirishk, 31° 43' N., 64° 45' E., Afghanistan. FMNH 730, Baluchistan. MCZ 7224, between Nushki and Helmand, Baluchistan (collected in 1896 by Maynard and MacMahon; not part of the syntypic series). USNM 158536–158538, 10 km. east of Dalbandin, Chagai District, West Pakistan.

DIAGNOSIS. Dorsal scales enlarge very gradually from flanks to mid-dorsal line, homogeneous; nasal shields in contact; no spinose scales on neck or back of head; both sides of fourth toe and outer aspect of third toe strongly fringed;



FIGURE 2. Dorsal (above) and ventral (below) view of lectotype of *Phrynocephalus ornatus* Boulenger.

three scales separate nasals from upper labials; two or three suborbital scales, none larger than adjacent scales; no dark-margined light dorsolateral stripe between fore and hind limbs.

DESCRIPTION. LECTOTYPE, BM 1946.8.28.20 (♂). Head about 1.1 times as long as broad, twice as long as high, snout broadly rounded; forehead convex and slightly sloping in profile; length of head (to angle of jaw) goes four times into snout-vent length; tail slightly more than $1\frac{1}{2}$ times length of head and body; hind limb reaches well beyond tip of snout, tibia $1\frac{2}{3}$ times length of head; forelimb reaches well beyond tip of snout. Nostrils directed upward, nasals in contact, the lower portions separated by one scale; nasals separated from upper labials by three scales; most scales of head keeled; 10 scales between nasals and scale bearing prominent pineal eye; about 28 scales across hood, between the eyes; 13/14 supralabials; 11/12 infralabials; three rows of scales separate orbit from supralabials; 41 scales between mental and gular fold. Dorsal scales feebly keeled, imbricate, subequal, homogeneous, not sharply set off from lateral scales; ventrals smooth; scales of dorsal surfaces of limbs and tail strongly

keeled, imbricate, subequal; 87 scales round middle of body. Both sides of fourth toe and outer aspect of third toe strongly fringed; fringes on inner side of third toe point downward; 37 lamellae beneath fourth toe.

Color (in alcohol) light sandy gray above, with two rows of indistinct small dark spots down the back; a darker gray, festooned dorsolateral stripe, very faintly margined above with lighter color from eye down length of body onto tail; a second gray stripe on lower temporal region; a narrow light lateral stripe (much narrower than gray dorsolateral stripe), and below this a dark lateral stripe of even narrower width; a gray streak on hinder part of thigh. Venter white, tail below with four dark brown to black bars, these faintly indicated in gray on dorsal surface of tail, each interrupted by an elongate vertebral white spot; tip of tail white below. No dark markings on chin or throat. Tail lemon-yellow below in fresh specimens (Boulenger, 1887, 1889).

In life, brownish above, dark spots on back surrounded by orange (Clark, personal communication).

Measurements (in millimeters): snout-vent 38; tail 53; head (to angle of jaw) 9; forelimb 20; hind limb 35; foot 16.

REMARKS. We have already remarked on the occurrence of ovarian and oviducal eggs in our sample (see remarks under *P. clarkorum*). There seems little doubt that these animals breed but once each year.

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